

## THE IMPACT OF LONG-TERM ONLINE LEARNING ON THE PSYCHOLOGICAL STATE OF HIGHER EDUCATION STUDENTS

### ВПЛИВ ТРИВАЛОГО ОНЛАЙН НАВЧАННЯ НА ПСИХОЛОГІЧНИЙ СТАН ЗДОБУВАЧІВ ВИЩОЇ ОСВІТИ

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**Анотація.** Одна з найгірших пандемій останнього часу – COVID-19 та війна в Україні серйозно вплинули на суспільство. Зокрема, студенти зазнали фізичного та психічного впливу від карантину. Це збільшило поширеність психологічного стресу, тривоги та депресії серед студентів університетів. У цьому дослідженні ми вивчили рівень депресії серед студентів, які навчалися віртуально через пандемію COVID-19 та війну, а також проаналізували її вплив на їхню навчальну успішність. Результати показали, що три чверті студентів університету страждали від різних депресивних симптомів, половина з яких мала помірний або екстремальний рівень депресії.

**Ключові слова:** карантин, онлайн навчання, депресія, психічне здоров'я, навчальна успішність.

**Abstract.** One of the worst pandemics of recent memory, COVID-19 and the war in Ukraine, severely impacted the public. In particular, students were physically and mentally affected by the lockdown. This increased the prevalence of psychological stress, anxiety, and depression among university students. In this study, we investigated the depression levels university students who were learning virtually because of the COVID-19 pandemic and the war and examined its impact on their educational proficiency. The results indicated that three-fourths of the university students suffered from different depressive symptoms, half of which had moderate to extreme levels of depression.

**Key words:** quarantine, online learning, depression, mental health, academic performance.

**Introduction.** To contain the virus, the lockdown caused academic disruptions. This resulted in the indeterminate closure of schools, universities, various institutes, shopping malls, and centres of economic activities [1, 2]. Repetitive activities, transfer of educational mode to distance (virtual) learning, and change in social life amplified the prevalence of psychological stress, anxiety, depression, and acute stress reactions among university students [3]. Sociodemographic factors associated with low mental health include financial constraints, old age, infection risk, and fear of losing a relative or friend. In addition,

COVID-19 pandemic-related educational stress may be attributed to (in no particular order): transformed teaching and assessment methods; scepticism about university education; technological worries about online courses [4, 5]; uncertainty about the future because of academic disruptions; fear of failing examinations; inability to concentrate during lectures, and many more factors.

**The aim of the study.** To study the impact of long-term online learning on the mental state of university students.

**Materials and methods.** A literature search was conducted in PubMed, Scopus and Web of Science databases using keywords.

This study examines depression levels and investigates virtual learning-related distress factors, which might predict the increased level of depressive symptoms among university students during the COVID-19 pandemic. Demographic data and personal characteristics, such as age, gender, and area of study, were recorded.

**Results.** The factors related to virtual learning sequel to the COVID-19 pandemic, and its impact on students' educational behaviours were divided into two categories. Questions on virtual learning's effect on students' feelings from an educational perspective (Category 1) had four items, each with a "Yes" or "No" answer. Likewise, questions on virtual learning and its effect on students' understanding of the subjects/materials (Category 2) had five items, each with a "Yes" or "No" answer. In the first category, the highest percentage was feeling worried and having a fear of exams (79%), followed by stress (75.2%), lack of motivation, and decreased productivity (70%). In the second category, the highest percentage was 78%, who felt they had to put extra self-effort into understanding and studying.

Furthermore, 74.5% felt that virtual learning was more challenging for them to understand than physical learning. In addition, 73% said virtual learning was slow and extra time was needed to understand and learn the concepts, while 64% found it boring. Finally, 58.6% had difficulty solving problems and submitting properly written answers.

The first category, which dealt with students' feelings from the educational point of view, hypothesized that lack of motivation, stress, worry/fear of examinations, and decreased productivity would significantly impact the development of depressive symptoms among students.

The second category dealt with virtual learning and its effect on students' understanding of the subjects/materials. It was hypothesized that the need for extra self-effort to understand the subject, learning became harder, learning became slower, learning was boring, and difficulty in solving problems and writing answers properly would have a

statistically significant impact on developing depressive symptoms among students.

Furthermore, we explored two distress factors, stress, and worry/fear of exams, which contributed statistically significantly to worsening depressive symptoms. Using the chi-square test, we examined the association of the distress factors with depression levels; that is, what extent does stress or worry/fear of exams contribute to moderate or severe depression. The results showed a statistically significant association between stress and moderate to severe levels of depression. Likewise, there was a statistically significant association between worry/fear of exams and moderate to severe levels of depression.

Results indicate that 75% of the students suffer from stress, and about half (47%) have high levels of depression. This is consistent with the results in [6]. Our findings also indicate that 79% of the students suffer from fear of exams, and about half of them (47%) experience moderate to severe levels of depression. It is usual for some students to have worries and fear for exams; however, it is highly unusual for more than three-fourths of the students to experience fear and worry. This is a clear indication that the changed mode of lecture delivery and exam administration because of COVID-19 has a significant role in raising depression levels among university students. Our findings indicate that a higher percentage of females experience extreme levels of depression than males (28% of females compared to only 4% of males), stress (59% females, vs. 41% males), and worry/fear of exams (60% females, vs. 40% males). This finding is consistent with many studies concerning college students, in which females were at a higher risk of suffering psychologically during virtual learning because of the COVID-19 pandemic [7, 8, 9, 10]. Another study showed that Vietnamese female students had a higher percentage of depression compared to male students [11]. Furthermore, Huang et al. [12] reasoned that Chinese females experienced more anxiety than males during the COVID-19 pandemic. Thus, we assert that females are more commonly inclined toward depression and anxiety disorders than males [13].

The results of the open-ended responses demonstrated the students' frustration and stress relating to online learning. In contrast, very few students positively indicated that online learning and studying from home felt relaxing.

**Conclusions.** COVID-19 has been a catastrophic experience. Although it has largely subsided, new variants are causing apprehension among health officials. Research found that 75% of university students suffer from some degree of depression. Half of these students showed moderate to extreme levels of depression. This is greater than the expected depression level in the overall population. This study confirms that stress, worry, and fear of examinations, decreased productivity, and the fact that virtual learning is boring are significantly associated with increased depression. Findings also indicate that 75% (79%) of the students suffer from stress (fear of exams), and that about half of them have increased levels of depression. It should be noted that the students are 18-24 years old. This is consistent with the study [14], which found that psychological distress, stress, and anxiety were higher in the younger age group during the COVID-19 pandemic.

#### References.

1. Viner, R.M. et al. (2020) School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. *Lancet Child Adol Health.* 4:397-404.
2. Anderson, R.M. et al. (2020) How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet.* 395:931-4.
3. Sankhi, S., Marasine, N.R. (2020) Impact of COVID-19 pandemic on mental health of the general population, students, and health care workers: a review.
4. Azmi, F., Khoshaim, H. (2021) The COVID-19 pandemic and the challenges of e-assessment of calculus courses in higher education: a case study in Saudi Arabia. *Ijltet.* 20(3):265-81.
5. Azmi, F. (2021) Undergraduate students' preference regarding the type of online homework questions in math and science subjects and instructors' analysis. In proceedings of Conference IC4E 2021: 12th International Conference on e-Education, e-Business, e-Management, and e-Learning. Tokyo, Japan, January 10-13.
6. Sankhi, S., Marasine, N.R. (2020) Impact of COVID-19 pandemic on mental health of the general population, students, and health care workers: a review.
7. Aristovnik, A. et al. (2020) Impacts of the COVID-19 pandemic on life of higher education students: a global perspective. preprints.org.
8. Da Silva, M.L. et al. (2020) A systematic review of the prevalence of anxiety symptoms during coronavirus epidemics. *J Health Psychol.* 71:135910532095162-11.
9. Xiong, J. et al. (2020) Impact of COVID-19 pandemic on mental health in the general population: a systematic review. *J Affect Disord.* 277:55-64.
10. Sundarasan, S. et al. (2020) Psychological impact of COVID-19 and lockdown among university students in Malaysia: Implications and policy Recommendations. *IJERPH.* 17:6206-13.
11. Nguyen, D.T. et al. (2019) Low self-esteem and its association with anxiety, depression, and suicidal ideation in Vietnamese secondary school students: a cross-sectional study. *Front Psychiatry.* 10:698.
12. Huang, L. et al. (2020) Emotional responses and coping strategies of nurses and nursing college students during COVID-19 outbreak.
13. Hunt, J., Eisenberg, D. (2010) Mental health problems and help-seeking behavior among college students. *J. Adolesc Health.* 46:3-10.
14. Alyami, H. et al. (2021) Depression and anxiety during the COVID-19 pandemic in Saudi Arabia: a cross-sectional study. *Int J Clin Pract.* 75:e14244.

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